AMENDMENTS TO THE CLAIMS

1. (Previously presented) The undulator of Claim 35, wherein the magnets are supported by a support structure, and the temperature-compensating material is selectively arranged to decrease the temperature dependence of the magnetic field by compensating for a temperature-dependent change in the magnetic field.

2. (Original) The undulator of Claim 1, wherein the temperature-compensating material is movably arranged to fine tune its compensation effect after it is initially arranged.

3. (Original) The undulator of Claim 1, wherein the amount of temperature compensating material may be adjusted to fine tune its compensation effect after it is initially arranged.

4. (Original) The undulator of Claim 1, wherein the temperature-compensating material is arranged to compensate for a temperature-dependent change in the strength of the magnetic field.

5. (Original) The undulator of Claim 4, wherein the temperature-compensating material is arranged in a parallel flux shunting configuration to render the magnetic field strength independent of a temperature variation over a predefined range.

6. (Original) The undulator of Claim 4, wherein the temperature-compensating material is arranged in a parallel plus series flux shunting configuration, and the contribution from the parallel shunting is stronger than the contribution from the series shunting so that the magnetic field strength is independent of a temperature variation over a predefined range.

7. (Original) The undulator of Claim 4, wherein the temperature-compensating material is placed on the front surfaces of the magnets facing the magnetic gap.

8. (Original) The undulator of Claim 4, wherein the temperature-compensating material is placed on the back surfaces of the magnets away from the magnetic gap.

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9. (Original) The undulator of Claim 4, further comprising poles arranged relative to the magnets, wherein the temperature-compensating material is associated with the poles.

10. (Original) The undulator of Claim 9, wherein the temperature-compensating material is placed on the back surfaces of the poles away from the magnetic gap.

11. (Original) The undulator of Claim 4, wherein the support structure comprises upper and lower structures for supporting upper and lower arrays of magnets, respectively, and equal amounts of temperature-compensating material are associated with the upper and lower structures, respectively.

12. (Original) The undulator of Claim 1, wherein the temperature-compensating material is arranged to compensate for a temperature-dependent shift of the position of the magnetic field centerline.

13. (Original) The undulator of Claim 12, wherein the temperature-compensating material is arranged in a parallel flux shunting configuration to render the position of the magnetic field centerline independent of a temperature variation over a predefined range.

14. (Original) The undulator of Claim 12, wherein the temperature-compensating material is arranged in a parallel plus series flux shunting configuration, and the contribution from the parallel shunting is stronger than the contribution from the series shunting so that the position of the magnetic centerline is independent of a temperature variation over a predefined range.

15. (Original) The undulator of Claim 12, wherein the magnets comprise a pair of opposing arrays of magnets, and different amounts of temperature-compensating material are associated with two opposing magnets, respectively.

16. (Original) The undulator of Claim 12, wherein the support structure comprises upper and lower structures for supporting upper and lower arrays of magnets, respectively, and

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different amounts of temperature-compensating material are associated with the upper and lower structures, respectively.

17. (Original) The undulator of Claim 1, wherein the temperature-compensating material is associated with end magnets that are placed on two ends of an array of the magnets.

18. (Original) The undulator of Claim 17, wherein the temperature-compensating material is arranged to compensate for temperature-dependent steering of an electron beam passing through the undulator.

19. (Currently Amended) A method of correcting for a temperature-dependent change in an undulator, the undulator comprising a periodic arrangement of magnets to produce a linearly symmetric periodic spatial magnetic field distribution in a magnetic gap defined by the magnets, the magnets being supported by a support structure, the method comprising the step of selectively arranging temperature-compensating ~~material~~ steel in the undulator to compensate for a temperature-dependent change in the magnetic field.

20. (Original) The method of Claim 19, further comprising the step of moving the temperature-compensating material to fine tune its compensation effect after it is initially arranged in the undulator.

21. (Original) The method of Claim 19, further comprising the step of varying the amount of the temperature-compensating material to fine tune its compensation effect after it is initially arranged in the undulator.

22. (Original) The method of Claim 19, wherein the temperature-dependent change comprises a change in the strength of the magnetic field.

23. (Original) The method of Claim 19, wherein the temperature-dependent change comprises a change in the position of the magnetic field centerline.

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24. (Original) The method of Claim 19, wherein the temperature-compensating material is applied to be associated with only a subset of the magnets, the subset comprising one or more magnets less than the whole magnets, to produce a local temperature-dependent variation to compensate for a local temperature-dependent change in the magnetic field.

25. (Original) The method of Claim 19, wherein the temperature-compensating material in specifically shaped so as to additionally achieve the shimming effect of tuning the magnetic field to correct for temperature-dependent field errors.

26. (Previously presented) The undulator of Claim 35, wherein the temperature-compensating material is selectively arranged to increase the temperature dependence of the magnetic field by rendering the magnetic field strongly dependent on a temperature variation over a predefined range.

27. (Original) The undulator of Claim 26, wherein what is made strongly dependent on a temperature variation is the strength of the magnetic field.

28. (Original) The undulator of Claim 26, wherein what is made strongly dependent on a temperature variation is the position of the magnetic field centerline.

29. (Original) The undulator of Claim 26, wherein the temperature-compensating material is arranged in a series flux shunting configuration.

30. (Original) The undulator of Claim 26, wherein the temperature-compensating material is in a parallel plus series flux shunting configuration, and the contribution from the series shunting is stronger than the contribution from the parallel shunting.

31. (Original) The undulator of Claim 26, wherein the temperature-compensating material is placed on side surfaces of the magnets with respect to the magnetic gap.

32. (Original) The undulator of Claim 26, further comprising poles arranged relative to the magnets, wherein the temperature-compensating material is associated with the poles.

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33. (Original) The undulator of Claim 32, wherein the temperature-compensating material is placed on side surfaces of the poles with respect to the magnetic gap.

34. (Original) The undulator of Claim 32, wherein the temperature-compensating material is placed between the magnet and the corresponding pole.

35. (Currently amended) An undulator comprising a periodic arrangement of magnets to produce a linearly symmetric periodic spatial magnetic field distribution in a magnetic gap defined by the magnets, further comprising a temperature-compensating ~~material~~ steel selectively arranged to control the temperature dependence of the magnetic field.

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